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Covid-19 and its impact on nephropathic patients: the experience at Ospedale "Guglielmo da Saliceto" in Piacenza

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ABSTRACT

Roberto Scarpioni and colleagues recount their experience with the Covid-19 epidemic at the Nephrology and Dialysis Center of the "Guglielmo da Saliceto" Hospital in Piacenza, where everybody is still fighting to this moment to contain the spread of the disease and face an increasingly unsustainable clinical situation. Piacenza is only 15 km away from the main cluster of cases in the country (Codogno, in the Lodi province) and, after the closure of the Hospital in Codogno, saw an escalation in the number of patients testing positive to Covid-19.

The authors describe their efforts and the practices they adopted to contain the spread of the disease among inpatients visiting the hospital's Hemodialysis Clinic. They also reflect on some of the data available on the 25/03/2020, such as the number of patients testing positive and the mortality rate, unfortunately very high. Their aim is to help all colleagues that have yet to face this epidemic in its full force.

KEYWORDS: Covid-19, coronavirus, nephropatic patients, dialysis, kidneys, Piacenza, Emilia Romagna

A cluster of cases of a new unknown type of pneumonia was first signalled in Wuhan, China, on the 31st December. Chinese researchers later identified the cause of the infection as a novel coronavirus called SARS-CoV-2 o Covid-19 [1]. Exactly one month later, in Rome, two Chinese tourists from Wuhan were the first to test positive to the virus in Italy. The first Italian case of Covid-19 was hospitalised on the 21st February in Codogno (Lodi province), only 15 km away from Piacenza [2]. The following weeks saw an exponential increase in the number of infections, to the point that Italy is now the country that has been most heavily hit by the pandemic after China. We have more than 57.521 confirmed cases, with more than 8.256 in the Emilia Romagna region alone, where 1.077 patients have died and 721 have recovered [3].

Here we describe our own experience with the Covid-19 epidemic at the Nephrology and Dialysis Center of the "Guglielmo da Saliceto" Hospital in Piacenza, where everybody is still fighting to this moment to contain the spread of the disease and face an increasingly unsustainable clinical situation. We hope this will be useful to all colleagues that have yet to face this epidemic in its full force, as it has already happened in Emilia Romagna and Lombardia. Piacenza is only 15 km away from the main cluster of cases in Codogno and, after the closure of the Hospital there, saw an escalation in the number of patients presenting to the A&E testing positive to Covid-19 (see Fig. 1).

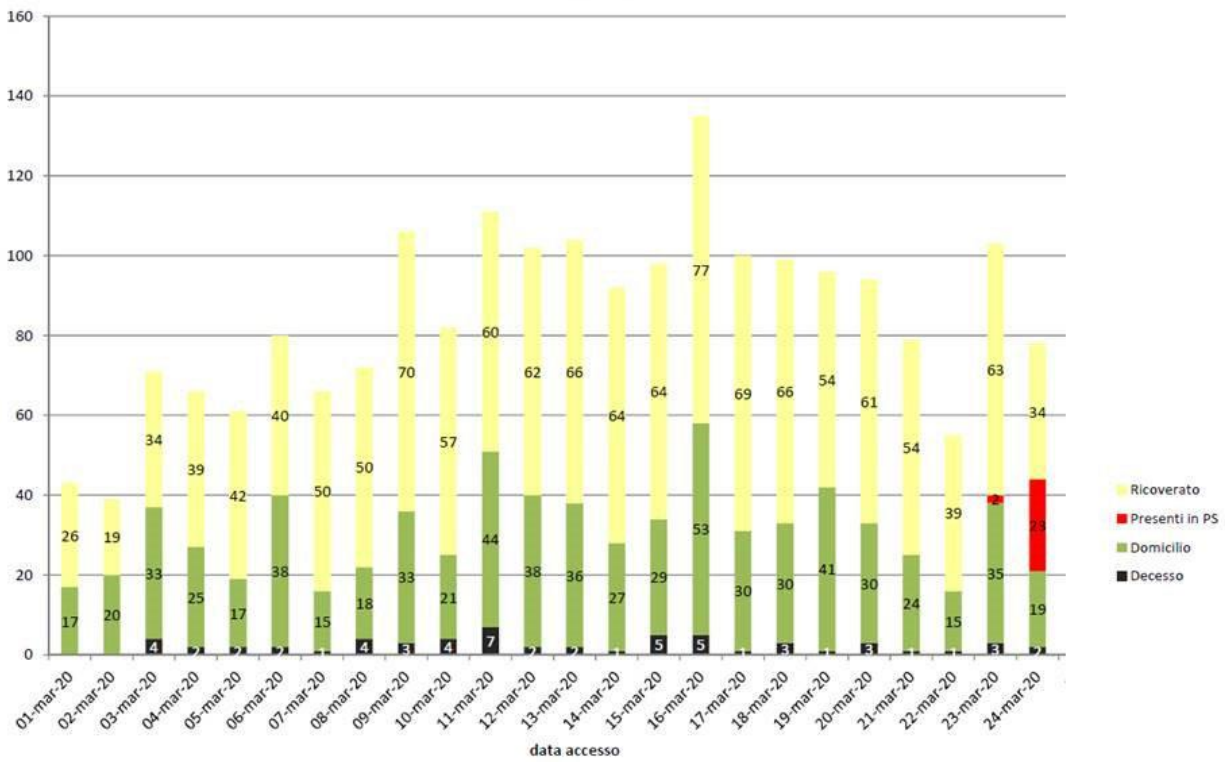

Fig. 1: Number of patients presenting to the A&E testing positive to Covid-19

The exponential growth in the number of nephropathic patients with a Covid-19 infection forced us straight away to adopt measures to contain the spread of the disease among inpatients visiting the hospital's Hemodialysis Clinic. Starting from day 3 and 4 we adopted very strict measures, both when dealing with patients and between colleagues. Fortunately to date (25/03/2020) none of the doctors has been found positive to the virus, while three nurses have been found positive and have isolated at home, in good general conditions.

Inpatients' body temperature was measured before they entered the ward; they were invited to wear face masks, wash their hands with an alcohol-based sanitizer and change their clothes and shoes. The personnel wore face masks, protective glasses and gloves, and disinfected rooms and machinery at the start of each shift [4].

At first, patients needing chronic hemodialysis were treated within the ward using CRRT (Continuous Renal Replacement Therapy) or high-volume hemofiltration (6 L/hr), with adsorbent membranes to remove inflammatory cytokines (IL-6) and endotoxins. In order to avoid contacts as much as possible, we treated two patients at a time, under the supervision of a single nurse and in the same room, separate from the rest and with its own transport system. Later, however, the high volume of patients forced us to move outside the ward to set up a new space devoted to quarantined patients. While waiting for the test results, all patients were treated as positive by medical personnel wearing face masks, goggles, gloves and overcoats. We insured a distance of at least 1-1,5 m between the beds by emptying the room of all that was not immediately necessary. One of the most difficult tasks was organising a separate transportation system, devoted solely to patients positive to Covid-19 and disinfected after each round. As for us, apart from wearing the protective gear describe above, we decided to avoid holding any staff meetings indoors.

As of today, it is extremely clear how dangerous Covid-19 is for fragile nephropathic patients: 41 of our patients on hemodialysis have been infected, 16% of the total (mean age 73±11, range 52-90 years, all white Caucasian, 31 men/10 women). The diagnosis was based on the results of the oro-rino-pharyngeal swab, wherever possible, or on the findings of the pulmonary CT. It is surprising to note that the rate of infection is the same recorded at the Renmin Hospital in Wuhan (16%) [5]; we have to consider, however, that over the first few says only symptomatic patients were tested for the virus.

Of these patients, those with a temperature and/or struggling to breathe were empirically treated with 5-OH-chloroquine and antiretroviral therapies, when considered appropriate by the infectologist. Due to the patients' age and previous comorbidities, the mortality rate has unfortunately been very high: to date, half of the infected patients have died (18/41, 41% raw mortality). This is way higher than the rate among non-nephropathic patients in Italy (around 10%) – and an unacceptable price to pay [6].

All transplanted patients in home care (118) and those treated with peritoneal dialysis (34) were discouraged from visiting the hospital but were contacted via telephone on a daily basis by our doctors and nurses. We have currently 4 transplanted patients who tested positive to Covid-19; two of them are hospitalised at the Transplant Center in Bologna, while the others are quarantined at home and are being monitored very closely for any pharmacological interactions. Luckily, only one PD patient has tested positive so far and is also at home, closely monitored.

In line with what has been reported by a few other authors, we observed only a small percentage of Covid-19-related cases of acute kidney injury (AKI) (<3%) [7]. To date, we have 5 AKI patients that have required intensive care treatment with CRRT; 4 of them, all men with existing comorbidities whose average age is 60 and age range is 39-71, are still being treated.

Looking back, the strict containment measures that we have adopted early on have certainly helped minimise the spread of the disease, although the mortality rate has remained unacceptably high among nephropathic patents. We are now waiting for new results to shed light on the renin-angiotensin blockade as a potential functional receptor for the virus [8, 9], on the use of immunomodulating drugs inhibiting IL-6 as a mean to reduce the progression of respiratory failure and inflammation, and on the use of other antiviral medications (or perhaps even a vaccine) that may reduce the rate of infection and the prognosis, which is currently extremely negative in 8-10%

of cases. While we wait to know more, however, we must invest in preventing the spread of Covid-19. Prevention through social distancing is imperative, especially for older patients with renal disease, but cannot be enforced in all cases as many of them need to come to the Center for life-saving treatment up to three times per week. The low rate of infection among patients in home care further confirms the effectiveness of self-isolation.

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